

Courtesy Answering Solution for Wireless Communication Devices

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FIELD OF THE INVENTION

This invention relates mostly to the operation of mobile phones such as cellular phones or any form of mobile wireless communication device capable of voice communication, and in particular, features within the user-interface functionality of such phones regarding how calls are answered as well as accessories that enhance the process of answering and processing incoming calls.

BACKGROUND

Mobile phones (alternately referred to as cellular or wireless phones) have been proliferated to the point that in any gathering or meeting of people today, one can predict with a reasonable degree of certainty that sometime during the meeting, a mobile phone will ring, causing some degree of disturbance, disruption, and/or aggravation. Sometimes, people are requested to turn off their phones and yet a phone still rings.

Many phones have vibration modes to indicate incoming calls. While this usually prevents the disruption caused by an audible ring, people still feel compelled to answer such calls. This means they will start talking, thereby disrupting the meeting or gathering, even if they simultaneously get up and exit the room. Also, people naturally talk relatively loudly when conversing on mobile phones, so any initiation of a call is rarely done quietly.

Currently, it is becoming more frequent to find mobile phones being banned in meetings, gatherings, and restaurants. This trend will undoubtedly continue given the ongoing reductions in the costs of mobile service and the resultant proliferation of mobile phones. Eventually, people who have a strong need to stay in contact with others for critical

1 business communications will find their business activities suffering due to being out of
2 touch while in meetings, gatherings, and restaurants. One option is to activate the phone
3 to answer the call and then walk to a location suitable for talking. However, many
4 conference rooms and certainly most restaurants and theaters are large enough that the
5 time required to move to a proper location is too long to expect the calling party to wait
6 without hearing some response from the receiving end. Also, the receiving party may not
7 want the calling party to hear the background sounds that exist in the receiving party's
8 ambient environment.

9
10 One capability that does exist (at least in some Nextel phones) is the capability to send a
11 caller immediately to voicemail by pressing a button. This is typically used by persons
12 who have left their phones in an audible "ring" mode (as opposed to a silent "vibrate")
13 and want to curtail the disturbance caused by the ringing sound. Otherwise, the only
14 other effect of using this feature is to send the caller into voicemail after one or two rings
15 instead of the usual four or more rings - something that makes little difference to the
16 caller. However, if the receiving party wishes to accept the call, this feature is of little or
17 no value.

18
19 If the situation is one where disturbing others is an issue, what typically happens is that
20 the receiving party will answer the phone and start the conversation while they are
21 standing up and starting to walk out of the room. They may even attempt to talk softly as
22 they do this, but most often, the damage relative to disturbing others is already done.
23 Besides the actions just described, the only other choice the receiving party has today is
24 to ignore the call and let it go into voicemail.

25
26 Many times, calls are just too important to ignore. What is needed is a method that
27 allows the person receiving the call to do so in complete silence while allowing them to
28 exit the room in a quiet, non-rushed manner, thereby showing a maximum amount of
29 courtesy to those in the meeting or gathering. At the same time, this needed method
30 should not inconvenience, confuse, or aggravate the caller. Such a capability does not
31 exist in mobile phones today.

1
2 In addition to mobile phones, a variety of digital electronic devices such as PDAs
3 (Personal Digital Assistants) and even miniature notebook computers are evolving to
4 have wireless connection capability, not only for email and Internet connectivity, but also
5 for voice communication. This voice communication capability essentially allows such
6 mobile communication devices to function in a similar way to a mobile phone, usually by
7 connecting some form of wired or wireless headset to the unit. Conversely, some mobile
8 phones are being produced that when opened, become a PDA with a larger display and
9 QWERTY-style keyboard. Similar problems to those listed above regarding courtesy
10 issues at gatherings apply to these combination units in a similar way. Although the
11 descriptions in this specification refer to what is currently termed cellular, wireless, or
12 mobile phones, it is understood that they also apply to any mobile or wireless device with
13 voice communication capability where such courtesy issues are important or significant.
14

15 One additional and emerging capability is to use wireless technology to implement all the
16 phones within a business office as mobile phones that act like cellular/wireless phones so
17 that employees can be better connected. Given this trend, references in this specification
18 to the "Service Provider" may be interpreted to be a conventional mobile/cellular service
19 provider such as Sprint, Verizon, CellularOne, Nextel, etc., or alternately, equipment
20 located locally within an office building or office campus, or some combination of a
21 conventional mobile service provider and local equipment functioning in unison or
22 collaboration.
23

24 Another problem that exists with regard to answering mobile phones occurs in those
25 circumstances where it is not practical or desirable to have the phone (or digital
26 communication device capable of voice communication) in close enough proximity to the
27 user to enable the vibration ring indicator to be effective. One such circumstance arises
28 when the phone or communication device is too large to be comfortably placed in a
29 pocket or in a belt holster. This will happen more and more as PDAs and small
30 computers become voice enabled. The other circumstance occurs when the user does not
31 have a pocket in which to place the mobile phone, or does not wish to place the phone in

1 a belt holster (or does not wear a belt) due to reasons relating to style of dress. Most
2 often, issues relating to dress will arise for the mobile businesswoman who wears a dress
3 or suit with no pockets and/or no belt, or where the bulge or protrusion of a phone would
4 not integrate well with their ensemble. In all of the above circumstances, the normal
5 phone vibration mode is useless and the user must rely on an audible ring to know when
6 there is an incoming call. This means that important calls will be missed with the phone
7 turned off, or that the user will be compelled to allow an audible ring in meetings, thereby
8 disturbing others. Of course, when phones are banned in meetings, there is no choice but
9 to miss the call unless an alternative solution is available, such as a miniature wireless
10 remote ring indicator that vibrates.

11
12 Unfortunately, in many business meetings held in closed conference rooms, the ambient
13 noise level is so low that any audible ring indication, unless emitted from a device
14 inserted in the user's ear, can probably be heard by others. In fact, most mobile phones,
15 when in vibrate-only mode, are audible to others unless they are physically damped by
16 being pressed close to the user's body. Better solutions are needed to all these problems
17 since it is quite probable that mobile phones and voice-capable digital
18 computing/communication devices will be banned in most gatherings within the
19 foreseeable future.

20 21 **SUMMARY**

22
23 Solutions for answering a call on a mobile phone are described, including a mode where
24 the receiving party activates a special "courtesy answering mode". Here, the receiving
25 party manually activates a recorded message to be played for the caller, indicating to the
26 caller that the receiving party will take their call shortly. The message may also say that
27 the receiving party is relocating to a location where they will be able to better receive the
28 call. The receiving party can then move in a quiet and unhurried manner, without feeling
29 compelled to start talking to the calling party. When the receiving party reaches the
30 appropriate location, they can activate the phone to initiate the phone conversation with

the calling party. In addition, various remote controller/communicator accessories are described to further aid in answering and processing an incoming call.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is described with respect to particular exemplary embodiments thereof and reference is accordingly made to the drawings in which:

Figure 1 shows a flow chart for a possible sequence of events that provide a more courteous scenario for those in proximity to the receiver of a call.

Figure 2 shows a flow chart for a possible sequence of events that provide a more courteous scenario for those in proximity to the receiver of a call, including the option of the receiving party to answer the call or not based on observing the "caller ID".

Figure 3 shows two alternative implementation scenarios for the methods of Figures 1 and 2 relative to the role of the Service Provider.

Figure 4 shows a flow chart describing the use of button presses prior to activating either the "Courtesy Mode" or "Send-to-Voicemail" functions.

Figure 5 shows a flow chart describing the capability for sending the caller to voicemail if the receiving party cancels "Courtesy Mode" or if a pre-determined time-out period has elapsed.

Figure 6 shows a flow chart for implementing a courtesy answering method on a "flip-type" mobile phone.

Figure 7 shows an alternative flow chart for implementing a courtesy answering method on a "flip-type" mobile phone.

1 Figure 8 shows a how a non-disruptive remote ring indicator unit can be used by a
2 businesswoman for use with her mobile phone, the unit optionally providing interaction
3 with the phone.

4
5 Figures 9a and 9b show a variety of configurations for remote ring
6 indicator/controller/communicators.

7
8 Figure 10 shows one possible implementation for the remote controller/communicator
9 functions of this invention combined with those of a wireless headset.

11 DETAILED DESCRIPTION OF THE INVENTION

12
13 Figure 1 shows a flow chart for a possible sequence of events that provide a more
14 courteous scenario and less disruptive experience for those in proximity to the person
15 receiving a mobile phone call. Here, Step 1 initiates the process by a ring indication to
16 indicate an incoming call. In this specification, a "ring indication" may be any form of
17 signal to the user that an incoming call is "ringing", including an audible ring or inaudible
18 vibration or both, or a flashing icon on the phone's display that may be used
19 independently or in addition to an audible ring or vibration. Normally a phone will be set
20 to start out in vibration-only mode when courtesy is an issue. However, some methods
21 described in this specification include changing the ring indication mode during the
22 processing of deciding how to process the incoming call, providing less disruption to
23 others in proximity to the receiving party by this change of ring indication mode.

24
25 The receiving party can then choose not to answer the call (automatically sending it to
26 voicemail if available) or alternately, can activate the "courtesy" feature (Step 2). The
27 user interface on the phone can be designed to activate the phone by a single button press,
28 by a combination of button presses (like the use of a function key followed by some other
29 key), or by a pick from a menu. However, the receiving party will often feel compelled
30 to make a quick decision. Usually, calls go into voicemail after a specific number of
31 rings, the anticipation of which may pressure the receiving party. Also, the caller ID

1 display is often delayed and additional time is consumed if the phone must be extracted
2 from a pocket or holster, all putting time pressure on the receiving party. It is therefore
3 important that whatever action is required to activate the courtesy feature is simple,
4 convenient and, and, if possible, intuitive. Note that in this specification, the term
5 "button" and "key" are often used synonymously. For instance numerical keys may be
6 referred to as buttons, and buttons that activate a specific function may be referred to as
7 function keys.

8
9 After the receiving party has manually activated the courtesy feature, the caller will hear
10 a pre-determined message (Step 3) indicating in effect that the receiving party will take
11 their call shortly and/or that the receiving party is relocating in order to be able to accept
12 their call. This message may also include a request that the caller please wait a few
13 seconds, and/or that the caller should please be patient. This scenario is decidedly
14 different from a conventional receptionist placing a caller on hold, since here, the caller is
15 specifically informed that the receiving party knows they are calling and has committed
16 to accept the call shortly. If the "party is relocating" message has been played, the caller
17 has additionally been informed of the reason for the delay in accepting the call - adding
18 an extra element of courtesy to the caller and making them feel more important than
19 simply being paced on hold. (It is a known fact that simply being placed on hold is
20 aggravating and sometimes even demeaning to the caller).

21
22 The scenario described here is also decidedly different from that where a person with
23 "call waiting" greets a caller by requesting that they "please hold" since here, the
24 receiving part is not able to actually talk to the caller due to the receiving party's physical
25 environment. Further, the scenario described here is also decidedly different from that
26 where an automated greeting played by phone equipment requests that the caller wait,
27 since in that circumstance, there is no indication to the caller that the specific person they
28 are attempting to reach is aware of their call or is even available.

29
30 After the "courtesy message" described above has been played, the caller is normally
31 placed on "hold" at this point. Next, the receiving party may, in an unhurried manner,

1 complete their current activity and/or leave the room and relocate (Step 4) to an area
2 where they can converse without disturbing anyone (the "courtesy period" or "relocation
3 period"). Last, the receiving party activates the phone to actually begin the conversation
4 (Step 5). This final step of activation could be done by a variety of mechanisms
5 contained in the phone's user interface, but is most intuitively performed by pressing the
6 "Send" button - the convention on many phones for answering a call. Pressing the
7 "courtesy" button an additional time can also be a way to activate the conversation.

8
9 Note that the "pre-determined" message mentioned above need not actually be pre-
10 recorded. Instead, the message could be pre-scripted and the actual voice can be digitally
11 synthesized based on the script. Messages that carry additional information for the caller
12 will be discussed later.

13
14 Figure 2 shows a flow chart for another possible sequence of events that provide a
15 courteous scenario for those in proximity to the receiver of a mobile phone call, including
16 the optional step (Step 1a) where the receiving party may decide to answer the call or not
17 based on observing the "Caller ID". Figure 2 also specifically shows the step (Step 3a) of
18 placing the caller on hold while the receiving party relocates. While on "hold", the caller
19 may hear an imposed silence or may hear some form of recording (music, news, etc.)
20 although since the caller is expecting a very short wait, silence might be more
21 appropriate. It is valuable to avoid an audio connection during the relocation period,
22 since there may be conversation or background noises in the receiving party's
23 environment that he or she does not wish the caller to hear. During the relocation period,
24 there should be a visible indication on the phone's display that the courtesy mode has
25 been activated (included in Step 2a in Figure 2) as a means of feedback to the receiving
26 party and to remind them that the caller is on hold. Some kind of blinking indication
27 would be useful for this purpose. If the caller hangs up while courtesy mode is active
28 (during the courtesy or relocation period), this special "hold" indication would turn off.
29 Under these circumstances, there could also be a message to the receiving party to the
30 effect that the courtesy mode terminated by the caller, which could be abbreviated and
31 displayed as "CM Term" or just "Term", for example.

1
2 Many mobile phones today contain a Caller ID display feature. Although it typically
3 takes an extra ring before this information appears on the display of the phone, it is
4 extremely useful for the receiving party, in the courtesy scenario described herein, to be
5 able to observe the Caller ID information. This enables them to quickly decide if they
6 wish to accept the call or not, since accepting the call means that they must leave the
7 room to initiate a conversation. Some mobile phones are of the "flip-phone" variety
8 where the keypad is on a hinged platform that flips up to cover the display when the
9 phone is closed. Other flip-type phones have a hinged cover that covers the keypad
10 and/or display, and may also include the microphone so that the microphone is placed in
11 closer proximity to the user's mouth when the phone is open. These flip-type phones
12 usually answer a call automatically when opened, but can usually be reprogrammed to
13 not answer upon opening, thereby allowing the receiving party to observe the "caller ID"
14 feature and decide if they wish to accept an incoming call.

15
16 Given the time pressure applied to the receiving party when using the caller ID feature, it
17 becomes even more important that the activation of the courtesy mode is extremely
18 simple - preferably by way of a button on the phone specifically designed for this
19 purpose. While it is possible to expand the courtesy mode to include a number of
20 response message choices in addition to the primary courtesy message announcing, in
21 effect that "the receiving party will take their call shortly" or a "delay while the receiving
22 party relocates", requiring the user of the phone to select one of a number of response
23 messages in a hurry after taking the time to observe the Caller ID information, adds an
24 additional level of difficulty and delay. In fact, if such a menu of possible response
25 messages is offered as part of the courtesy future, the most practical user interface for the
26 phone should have the primary courtesy message as the default or primary message that
27 can be chosen in the least amount of time and with the least complexity (or fewest
28 number of button pushes).

29
30 Figure 3 shows a further level of detail including two possible implementations for the
31 courtesy answering method of Figures 1 and 2 with regard to the role of the mobile

1 service provider. In the first scenario, described by Steps 6 and 7, the courtesy answering
2 feature is implemented entirely within the mobile phone, thereby not requiring any
3 change in the software capabilities residing at the mobile service provider. The second
4 scenario, described by steps for 8, 9, and 10, includes communication between the
5 mobile-phone and the service provider whereby the service provider's equipment
6 provides any messages and also implements putting the caller on hold and finally initiates
7 the conversation.

8
9 In Step 6, upon activation of courtesy mode, the mobile-phone will answer the call, play a
10 digitally pre-determined message that has been stored in the phone, and then place the
11 caller on "hold" (Step 7) until the receiving party is in position to initiate a conversation.
12 During the time the caller is on hold, the caller will hear no sound, or could hear pre-
13 recorded sounds or music, but will normally not hear the ambient sounds surrounding the
14 receiving party. Steps 6 and 7 are therefore implemented completely within the mobile
15 phone itself, and do not involve any interaction with the mobile service provider.

16
17 In an alternative method, upon the receiving party's activation of courtesy mode, the
18 mobile-phone provides a signal to the mobile service provider that courtesy mode has
19 been activated (Step 8), along with any associated information. The service provider then
20 plays the appropriate digitally pre-determined message to the calling party (Step 9), and
21 then puts the calling party on hold. Finally, after the receiving party has physically
22 relocated to a location where they can comfortably enter into a conversation and has
23 pressed the appropriate button(s) on the phone to signal as such, the mobile phone then
24 provides a signal to the service provider (Step 10) signaling the service provider to
25 complete the connection between calling and receiving parties to initiate a conversation.

26
27 In a modified version of the sequence of Steps 8, 9, and 10, the receiving party could
28 select one of a number of pre-determined messages and actions from a menu, since the
29 service provider is involved in these actions and it is normally the service provider that
30 also provides control of, and implementation for, voicemail capability. However, it is
31 important that the activation of courtesy mode (typically including a message that the

receiving party will take their call shortly and/or that the receiving party is relocating) does not send the caller into voicemail, and that courtesy mode be the easiest function to activate since it requires the quickest decision on the part of the receiving party.

If a menu-style user interface is utilized, a menu of possible choices for actions to be taken by the service provider in this modified version of steps 8, 9, and 10 could be as follows:

- 1) Play "courtesy mode" message, place caller on hold, wait for signal from receiving party to initiate connection. (do not send caller to voicemail)
- 2) Play "I will call you back in 10 minutes, please leave a message if you desire" and send caller to voicemail.
- 3) Play "I will call you back in 30 minutes, please leave a message if you desire" and send caller to voicemail.
- 4) Play "I will call you back in 1 hour, please leave a message if you desire" and send caller to voicemail.

The above menu is just one example, and may variations on this theme are possible. If a menu similar to that shown above were to be offered, the receiving party must be able to choose the first item with a minimum number of button pushes, and a minimum degree of complexity. Preferably, if there is a special button for courtesy mode, and that button were to cause a menu of multiple choices to be displayed, pressing that same button a second time would, for instance, be a quick and simple way to choose the first item on the list - as opposed to having to use separate up/down buttons for scrolling and then a different button to choose a specific item from the menu.

Figure 4 shows an alternate method for handling both courtesy mode and conventional voicemail where, instead of choosing actions from a menu, actions are defined by pressing function keys after optionally pressing some combination of numerical keys. As before, the receiving party observes the caller ID and decides to accept the call (Step 1a). Then, they can optionally enter some number of numerical digits before pressing a

function key. Step 11 shows one, two, or three digits as an example. This number of digits is especially useful for both courtesy mode and send-to-voicemail mode. After entering some number of digits, the receiving party would press the specific function key for either courtesy mode or send-to-voicemail mode. In other words, the interpretation of the digits is not determined until the function key is pressed. Although a number of paradigms for numerical entry may be used here, a very intuitive method would be to enter digits in a manner similar to that used at all ATM machines where each digit moves to the left as more digits are entered. This also allows less time to be consumed if fewer digits are needed. Most important, the method of Figure 4 allows no digits to be entered before pressing a function key thereby providing a simple and intuitive default mode (which most users will probably use most of the time).

Note that the two function keys referred to in Figure 4 for courtesy mode and send-to-voicemail mode may be "soft" defined keys as opposed to dedicated function keys. Many mobile phones today have two soft keys available. They could also be function keys requiring a two key sequence or the simultaneous pressing of two keys, although these alternatives are less desirable due to their complexity and the extra time it would take to execute their operation.

As shown in Figure 4, numerical button presses prior to pressing the courtesy mode key (Step 12a) could define the following functions (Step 13a):

<u>Key Sequence</u>	<u>Message</u>
no digits	Please wait while <receiving party> relocates in order to accept your call
1 digit (X)	Please wait approximately X seconds while <receiving party> relocates in order to accept your call
2 digits (XY)	Please wait approximately XY seconds while <receiving party> relocates in order to accept your call

3 digits (XYZ) Please wait approximately X minutes and YZ seconds while
<receiving party> relocates in order to accept your call
In a similar manner, numerical button presses prior to pressing the send-to-voicemail
mode key (Step 12b) could define the following functions (Step 13b):

<u>Key Sequence</u>	<u>Message & Function</u>
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no digits	Normal or Special voicemail greeting.
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1 digit (X)	<receiving party> will return your call in approximately X minutes, please leave a message if you desire.
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2 digits (XY)	<receiving party> will return your call in approximately XY minutes, please leave a message if you desire.
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3 digits (XYZ)	<receiving party> will return your call in approximately X hours and YZ minutes, please leave a message if you desire.
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Note that <receiving party> may be substituted with the specific name of the receiving
party.

Obviously, to invoke the voicemail function, the phone must either implement the
voicemail function, or alternately communicate with the service provider (where the
voicemail function is normally implemented). Also, the messages just described are not
entirely pre-determined since the time-related portion of the message must be generated
to correspond to button presses chosen by the user at the time of responding to the
incoming call. Therefore, portions of these messages must be synthesized in real-time, or
pieced together in real-time from a library of pre-recorded or pre-scripted words
representing all of the possible or necessary component words needed to build any
allowable message. In addition to a default courtesy message recording that might
specifically say "please wait while <receiving party> relocates in order to accept your

1 call", the mobile phone user should also have the option of recording their own
2 customized courtesy greetings.

3
4 For the functions described above where numerical buttons are pressed prior to answering
5 or otherwise processing an incoming call, a useful capability would be to extend the
6 amount of time ring indications occur (or increase the number of allowable rings) before
7 the caller is automatically sent to voicemail or automatically receives a message that the
8 receiving party is not available. This provides the receiving party with additional time to
9 observe the caller ID, make the decision for the disposition of the call, and press
10 whatever buttons are required. To implement this feature, any button pressed while ring
11 indications are in progress will cause this extension of time.

12
13 For the modes where time-frames are inserted into the message, the words representing
14 numerical values can be pre-recorded by the user or inserted in an arbitrary or
15 synthesized voice. An example of a customized courtesy greeting is: "Hello, you've
16 reached John Smith. Please stay on the line since I will be able to take your call in just a
17 few seconds. I'm currently in a meeting and need to leave the room in order to be able to
18 talk. Thanks for being patient."

19
20 Where the user has selected to send the caller to voicemail with no call-back time-frame
21 specified, the message can optionally be a special voicemail greeting that, unlike a
22 normal or conventional greeting, provides some indication to the caller that the receiving
23 party is, in fact, aware that the caller has called, and that they are tied-up in a meeting but
24 will get back to the caller as soon as possible, although they are not sure when they will
25 be able to do so.

26
27 Figure 5 shows a flow chart describing a capability for canceling courtesy mode and
28 sending the caller to voicemail in case the receiving party is forced to reverse their
29 decision to accept the call via courtesy mode. The situation is also described where the
30 receiving party initiates courtesy mode and is subsequently delayed in initiating the
31 conversation due to an unforeseen distraction or forgetting the caller is on "hold", thereby

1 requiring that the caller is sent to voicemail after a pre-determined time period (time-out)
2 has elapsed. To indicate to the receiving party that the time-out is about to elapse, an
3 optional brief warning beep or vibration can be emitted some number of seconds before
4 the caller on hold is sent to voicemail. After courtesy mode has been initiated (Step 2)
5 and the caller has been placed on hold (Step 3a), timeout checks (Step 14) are performed
6 as well as checks to see if the receiving party has decided to send the caller to voicemail
7 (Steps 15 and 16). If the receiving party presses the appropriate key(s) to initiate the
8 conversation (Step 17), the caller will be removed from hold and the conversation will
9 begin (Step 18). Again, since the ability to send a caller to voicemail is inherent in the
10 functionality required to implement the flow of Figure 5, there must be a communication
11 link between the phone and the service provider if the voicemail capability is
12 implemented on equipment located at the service provider.

13
14 Figure 6 describes functionality specific to "flip-type" mobile phones. Here, the
15 receiving party opens the phone (Step 19) after it starts to ring and/or vibrate in order to
16 observe the caller ID display (Step 1a). In this sequence, the phone does NOT accept the
17 call upon opening. Should they initiate courtesy mode, they can then close the phone
18 (Step 20) without the call being terminated (as is normally the case with flip-type
19 phones). This allows them to place the phone back in their pocket, in a phone holster or
20 belt clip, or simply hold it in their hand as if it were inactive, and then walk out of the
21 room as if they were simply leaving the gathering. Finally, when they are in a location
22 suitable for having the conversation without disturbing anyone, they can open the phone
23 (Step 22) and initiate the conversation by pressing the appropriate key. Optionally, the
24 phone can automatically initiate the conversation upon being re-opened while in the hold
25 state during courtesy mode.

26
27 Figure 7 is essentially identical to the flow of Figure 6 but also adds the capability to alter
28 or stop either the ringing and/or vibration indications (Step 23) when the receiving party
29 opens the flip-type phone. The caller continues to hear ringing and will not know that the
30 receiving party has opened the phone.

1 Although not offered on phones today, a useful ring mode would be to combine vibration
2 mode with a very low level audible ring for use in environments with a relatively high
3 level of ambient noise. In this environment, the ring would be barely audible to the
4 receiving party and therefore would normally be inaudible to those nearby. The addition
5 of even this quiet ring to the vibration indication would provide an extra level of
6 confidence to the receiving party in situations where the receiving party was so fearful of
7 missing a specific call that they are willing to risk disturbing others at a meeting or
8 gathering. As shown in Step 23 of Figure 7, the audible portion of the ring/vibrate mode
9 just described can be discontinued when a flip-type phone is opened. Similarly, ringing
10 and/or vibration indications can also be discontinued or altered as soon as certain keys are
11 pressed on a non flip-type phone while an incoming call is in progress. Whenever
12 ringing and/or vibration indications are discontinued, either due to opening a flip-type
13 phone or due to pressing keys on any type of mobile phone, a flashing icon on the
14 phone's display can continue to provide a ring indication so the receiving party will know
15 that the calling party has not hung-up. Also, a flashing icon can be used along with
16 audible or vibrating ring indications if desired.

17
18 Since virtually any implementation of the courtesy mode concept of this invention relies
19 on the user receiving a silent (from the perspective of other around them) indication that
20 there is an incoming call, it is important to address the problem that exists with regard to
21 answering mobile phones in those circumstances where it is not practical or desirable to
22 have the phone (or digital communication device capable of voice communication) in
23 close enough proximity to the user to enable the vibration ring indicator to be effective.
24 One such circumstance includes a phone or communication device is too large to be
25 comfortable placed in a pocket or in a belt holster, while the other circumstance occurs
26 when the user does not have a pocket in which to place the mobile phone, or does not
27 wish to place the phone in a belt holster (or does not wear a belt) due to reasons relating to
28 style of dress or social stature. In fact, it is common for employees attending meetings
29 within a company to place their mobile phones on the table in front of them next to their
30 notepad and/or PDA rather than place it in a pocket or holster. This may be due to issues
31 of physical comfort, style of dress, or even simply to display their phone as a way of

1 indicating "I stay connected". Regardless, when the phone is not attached to their body in
2 some way, they cannot feel it vibrate.

3
4 One solution to the problems related to both the style of dress problem and the size
5 problem of carrying a mobile phone or wireless PDA is shown in Figure 8 where the
6 focus is on the businesswoman, but has a similar application for the businessman who
7 does not want the bulk of a mobile phone close to their body. Here a vibrating remote
8 controller/communicator 24 is clipped onto the user's belt, while the Mobile phone or
9 wireless PDA is carried in the purse 25. Communicator 24 is shown in a gold exterior
10 finish so that it blends into the user's outfit in a decorative manner. Of course, it could be
11 in black or any other finish. The style shown for communicator 24 folds closed to conceal
12 the display and any buttons. It could attach to the user's belt with a loop to pass the belt
13 through, or alternately, have a clip-on capability 26 as shown in Figure 9a. In a similar
14 way, miniature vibrating communicators can be designed to slip onto a watch band or
15 bracelet, or be incorporated into various forms of accessories or jewelry.
16 Communications between remote controller/communicator 24 and the mobile phone may
17 be accomplished through a variety of transmission methods and frequencies - the
18 Bluetooth standard mentioned earlier is just one.

19
20 It is known to use a remote vibrating ring indication to signal a person who is hearing
21 impaired that an incoming call is occurring on a conventional phone line attached to
22 special "Braille-type" equipment. However, the problem solved here is quite different
23 from that of the present invention. To implement a "courtesy" answering solution for
24 mobile phones, the opposite is desired - rather than desiring a ring be heard, it is instead
25 desired that the ring NOT be heard. Typically, equipment for the hearing impaired uses
26 every available method, including flashing lights and EXTRA LOUD audible signaling
27 (for those with partial hearing loss), to signal the user of an incoming call. Use of a
28 remote vibrating indicator, in the present invention, does not. In fact, it is sometimes
29 desired that REMOTE vibration normally be the ONLY active means of signaling an
30 incoming call since even having the mobile phone itself vibrate can be disturbing to
31 others. Also, prior art ring indicating devices for the hearing impaired do not provide bi-

directional communications where the user can selectively cause the phone to enter different modes where special messages are played for the calling party.

Where a remote vibrating indicator/controller 30 is used with a mobile phone that has been inadvertently left in either ring mode, vibrate mode, or both, a button 31 on remote vibrating indicator/controller 30 can send a signal to the phone to cease any audible and/or vibrating ring indications. A flashing icon on the phone's display can take over the task of signaling an incoming call while the user decides what action to take. While the purpose of remotely signaling the mobile phone to silence an audible ring is easily understood, the purpose of signaling to terminate the phone's vibrations is less so. In actuality, mobile phones DO make noise when they vibrate - especially when they are not physically damped by being firmly pressed against larger objects (human body or the interior of a purse or briefcase). Even a phone in the chest pocket of a sports jacket will make significant and noticeable noise if it is not pressed firmly against the body. When sitting on a conference table, a vibrating mobile phone is clearly audible (and disturbing) to others, especially in a meeting where the ambient noise level is low. In these circumstances, it is advantageous to ONLY use a remote vibrating indicator somehow attached to the user's body such that the vibrating indicator is truly silent. Note that remote vibrating indicator/controller 30 may be intended to be placed in a pocket, or may have an attachment loop 32 as shown for belt attachment, or may have a clip 26 as shown on unit 27. A miniature version of a remote vibrating indicator/controller 30 can also be constructed that will fit on a watch-band or bracelet.

Figure 9a shows a 3-view drawing of a clip-on vibrating remote controller/communicator. The finish could be a decorative gold or silver, or alternatively any other color. The unit could even be designed for the attachment of different exterior shells having different colors. View 27 includes a display that shows the caller ID information for incoming calls, and can also display a variety of status information. This status information can include whether or not the caller has been placed on "Hold" (as is done during courtesy mode) or if the caller has decided to terminate the call. Caller ID and other information is transmitted from the mobile phone or wireless PDA to the remote

1 controller/communicator. If the remote controller/communicator has the capability to
2 enter numerical digits, any sequence entered can be displayed. Also, the remote
3 controller/communicator can include buttons to activate courtesy mode 28 and send-to-
4 voicemail 29. The activation of courtesy mode or send-to-voicemail requires the remote
5 controller/communicator to send command information to the mobile phone or wireless
6 PDA.

7
8 If the caller has been placed on hold during the activation of courtesy mode, the elapsed
9 time they have been on hold can also be displayed on the same numerical display that
10 previously could have shown digits entered prior to activating courtesy mode. This
11 elapsed time display is shown in examples 33 and 34 of Figure 9b. Figure 9b shows a
12 variety of remote vibrating controller communicators similar to that of Figure 9a, but
13 instead intended to be carried in a pocket or holster. Units 33 and 34 are shown as open
14 units where the buttons and display are exposed at all times. Unit 35 is shown as a unit
15 that folds into a closed configuration where the buttons are protected from being
16 inadvertently pressed. Units 33 and 35 include a full numerical keypad so that
17 parameters can be entered prior to pressing the courtesy mode or send-to-voicemail
18 buttons, while unit 34 foregoes these buttons to allow a smaller size. Variations on these
19 configurations are possible to allow different degrees of functionality. Unit 34 is also
20 shown with button 31 included that has the function of stopping any ring indication,
21 audible or vibration, that is being emitted by the mobile phone, in order to curtail any
22 disturbance to those in the immediate vicinity.

23
24 The units shown in Figures 9a and 9b also include a "Function" button (Fn) so that the
25 unit can send a number of additional commands to the mobile phone or wireless PDA by
26 pressing the Fn button in conjunction with a numerical button. Examples of such other
27 commands include altering, terminating, and/or otherwise controlling the ring or ring
28 mode of the phone or PDA. In addition, units 33 and 33 in Figure 9b are shown with a
29 "Clear" or "Cancel" button. This has many uses including canceling a string of numerical
30 digits entered prior to pressing the courtesy mode or send-to-voicemail buttons, in case
31 the user makes a mistake or changes their mind in the middle of the process.

1
2 In addition to providing bi-directional communication with a mobile phone or voice
3 capable digital communications device, the remote vibrating communicators shown in
4 Figures 9a and 9b can also be used in an office environment to allow the user to respond
5 to incoming calls - regardless of whether or not their primary office phone is mobile. In
6 other words, even in the case of an incoming call on a standard, non-mobile office desk
7 phone, the activation of a courtesy mode function can provide the time required not only
8 for an individual to exit a meeting, but also to walk to their desk where their phone is
9 located. This capability is also advantageous when their office phone is, in fact, mobile,
10 but for whatever reason, they have left their phone at their desk. To implement such a
11 capability when the mobile phone or wireless PDA is not in the same room with the
12 remote controller/communicator or when the office phone system supports only non-
13 mobile desk phones, the office building may need to be designed with transceiver
14 capabilities distributed throughout the building so that the transmissions to and from the
15 remote controller/communicator do not have to pass through walls or travel long
16 distances.

17
18 Another form of remote vibrating communicator described as part of the present
19 invention is one that is combined with a wireless headset. Wireless headsets are
20 increasing in popularity due to their high convenience factor, safety factor while driving,
21 and recently, digital wireless communications mechanisms such as the "Bluetooth"
22 standard have been employed to allow a more clear audio connection through digital
23 processing, or to facilitate digital speech recognition in addition to adding the wireless
24 "freedom" factor. Figure 10 shows a prior art wireless headset 36 that uses the
25 "Bluetooth" communications standard and is manufactured by Plantronics Corporation.
26 Described herein for reference purposes, this headset is comprised of a main body that
27 includes a miniature speaker 37 and microphone 39. Attached to the main body is an ear
28 loop 38 that pivots to allow it to adapt to the structures of different ears, and to make it
29 easier to put in place on the ear. Also included is button 40 that performs the
30 "send/answer" and "end call" functions, so the user can execute these functions without
31 having to touch their mobile phone.

1
2 The remote vibrating communicator of this invention can be combined with a wireless
3 headset function to reduce the number of accessories the user must deal with while
4 further increasing the overall convenience provided to the user. Figure 11 shows one
5 possible form that includes combining these functionalities. Since the unit must be
6 compact and fit comfortably in a pocket, holster, or belt clip, the embodiment shown in
7 Figure 11 shows both the ear clip 45 and microphone extension 46 as folding such that
8 they become integral with main body 41 until needed for an actual conversation.
9 Earphone speaker 44 is contained in main body 41 while microphone 47 is located at the
10 tip of microphone extension 46. To convey caller ID and other information to better
11 enable incoming calls to be processed, main body 41 includes display 42. Also shown
12 are buttons 43, that for example, can perform the following functions:

- 13
14 1) send/answer/end
15 2) courtesy mode
16 3) send-to-voicemail
17

18 Other combinations of functions could, of course, be assigned to these buttons and unit
19 41 could be designed to have a lesser or greater number of buttons. Note that buttons 43
20 are positioned such that they can be easily operated while the unit is attached to the user's
21 ear, the button locations being easily located by "feel" alone. Note also that many other
22 physical configurations for the functions embodied in Figure 11 are possible, and that the
23 specific configuration shown here is simply one example.
24

25 Also shown in Figure 11 is an icon 48, in this example shown as a "@", that represents
26 the "flashing icon" referred to previously in this specification as a silent form of ring
27 indication. The term "flashing" can mean that the icon, when activated, alternately
28 appears and disappears. Another form of "flashing" can have the icon alternately
29 reversing its light and dark areas. Many schemes are possible. Any form of flashing icon
30 would typically be activated after the user of a mobile phone or remote
31 controller/communicator has pressed at least one button, thereby indicating to the device

1 that they are aware of an incoming call, and it is therefore all right to cease any audible
2 ring or vibration or both, this flashing icon taking over the ring indication function.

3
4 As mentioned earlier, references in this specification to the "Service Provider" may be
5 interpreted to be a conventional mobile service provider such as Sprint, Verizon,
6 CellularOne, Nextel, etc., or alternately, equipment located locally within an office
7 building or office campus, or some combination of a conventional mobile service
8 provider and local equipment functioning in unison or collaboration. In the case of such
9 a collaboration, the user's mobile phone becomes an extension of their office phone, and
10 vice versa, regardless of where they are located. This requires the equipment in the
11 business office to be linked and coordinated with the cellular (mobile) service provider,
12 including functions like local messaging, paging, voicemail, in addition to coordination
13 with receptionists and administrative assistants at the office, offering all the capabilities
14 that exist in conventional business office phone systems. To accomplish this
15 collaboration, the most effective way may be to install a local cellular base station in each
16 office building, these base stations connected to the cellular service provider in the
17 normal manner. The business voicemail recording system could reside at the cellular
18 service provider's location (the usual means), or possibly reside within the office building
19 itself. To function with consistently acceptable signal quality within the structure of an
20 office building, such a local cellular base station installed within the building may need a
21 network of distributed transceivers and/or antennas running throughout each building.

22
23 * * * * *
24

1 Therefore, a method and accessories for answering mobile phones and office phones,
2 including cellular phones and wireless communication devices with voice capability, has
3 been described that includes a special courtesy mode that enables the receiving party to
4 not miss the call while in a meeting at an office, at a gathering, or at a restaurant where
5 mobile conversations are either prohibited or would be disruptive to others, and at the
6 same time not inconveniencing, confusing, or aggravating the caller.

7
8 It should be understood that the particular embodiments described above are only
9 illustrative of the principles of the present invention, and various modifications could be
10 made by those skilled in the art without departing from the scope and spirit of the
11 invention. Thus, the scope of the present invention is limited only by the claims that
12 follow.

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